Follow-up Discussion to 2/3/16 Call with EPA
Former Electrolux Jefferson Site
April 5, 2016

Golder Associates

RCRA
555452

Discussion Items

1. Pleistocene Sand and Gravel Unit
   a) Potential influence of pumping at the cement plant located north of the City of Jefferson Wells 7 and 8
   b) Thickness and depth sand and gravel unit MW-67 – depth of shale
2. Total Petroleum Hydrocarbons (TPH) as a carbon source to degrade CVOCs
3. Delineation of 1,4-dioxane
4. Risk posed by shallow (exposed) soils near MW-19

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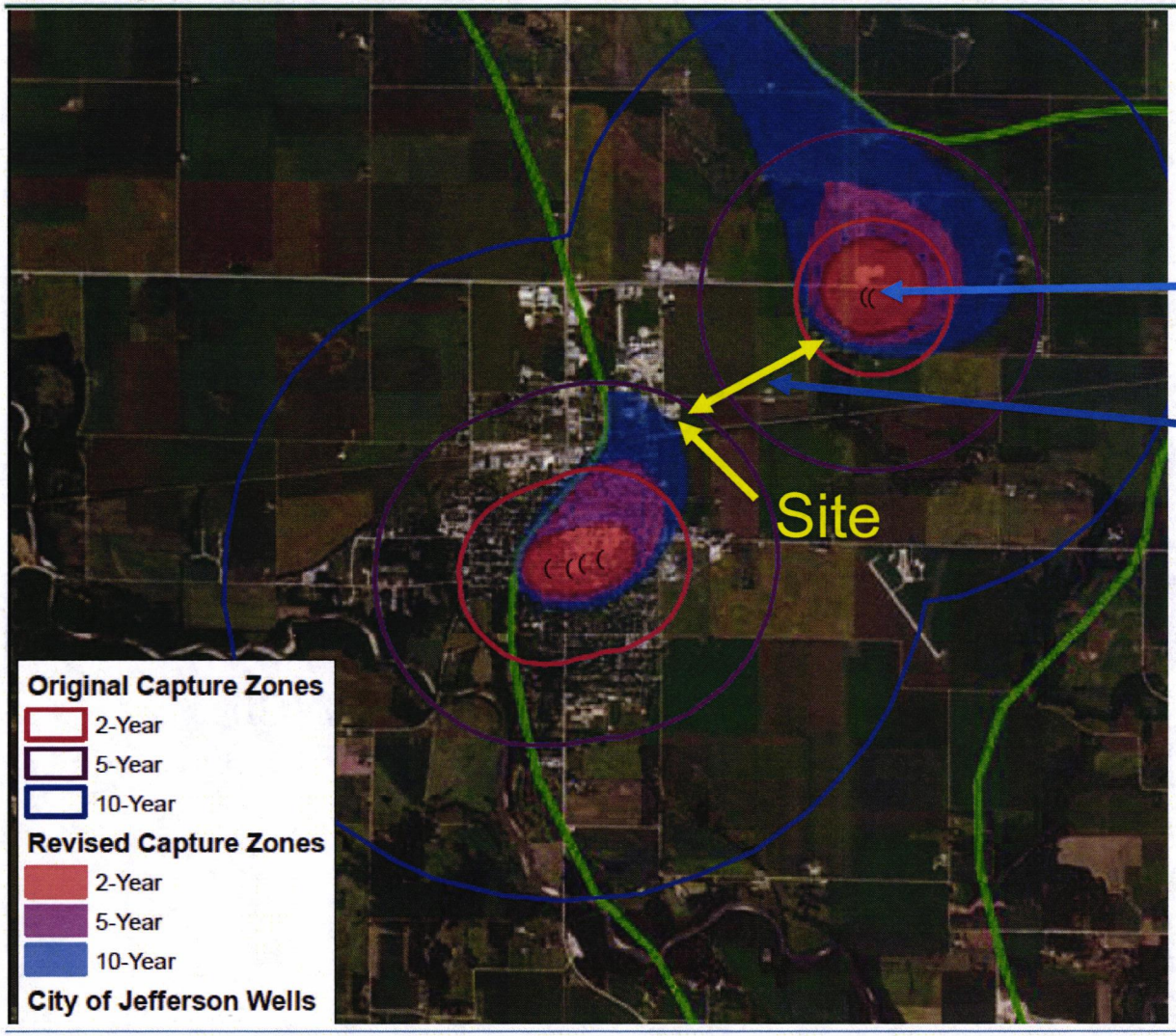
Projected Capture Zone – Wells 7 and 8



City Wells 7 and 8

Distance approximately 0.75 miles

Source:
Jefferson Groundwater Investigation
Greene County, Iowa

Iowa Geological and Water Survey
Technical Information Series 56
December 2013

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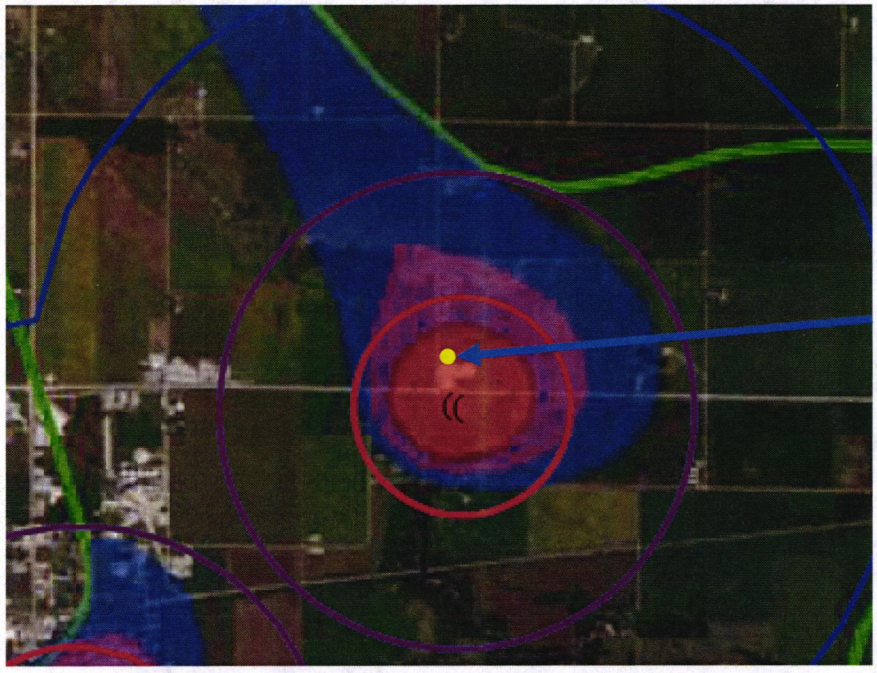
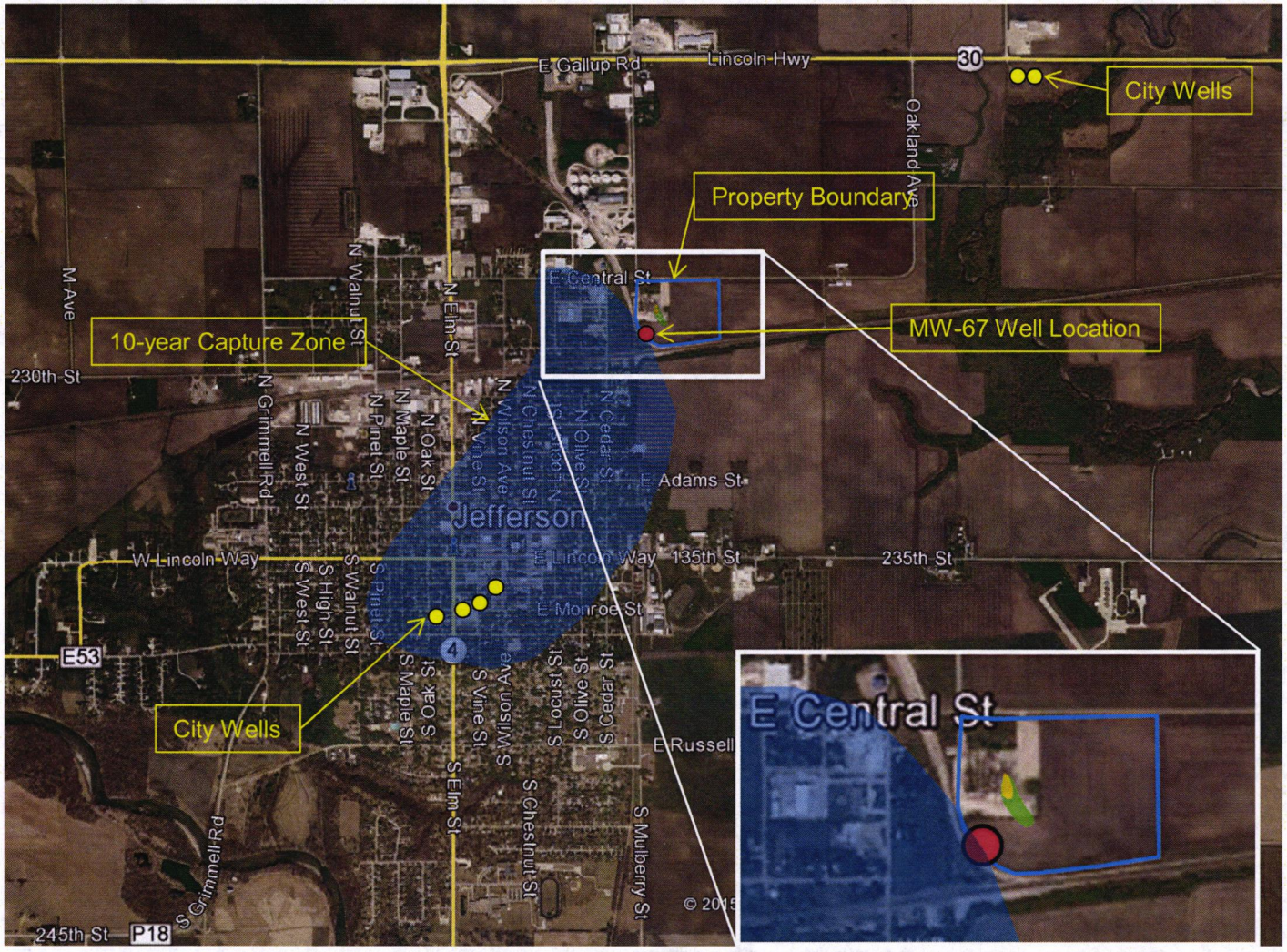
Comparison of City and Hamilton Cement Co. Wells

Well	Screen Depth	Screen Length	Pump Size
City Well #7	141 to 176 ft bgs	25 feet	2,000 gpm
City Well #8	120 to 177 ft bgs	57 feet	Unknown
Hamilton Cement	147 to 157 ft bgs	10 feet	25 gpm



Hamilton Cement Co. Well

Pleistocene Sand and Gravel Monitoring Well Location



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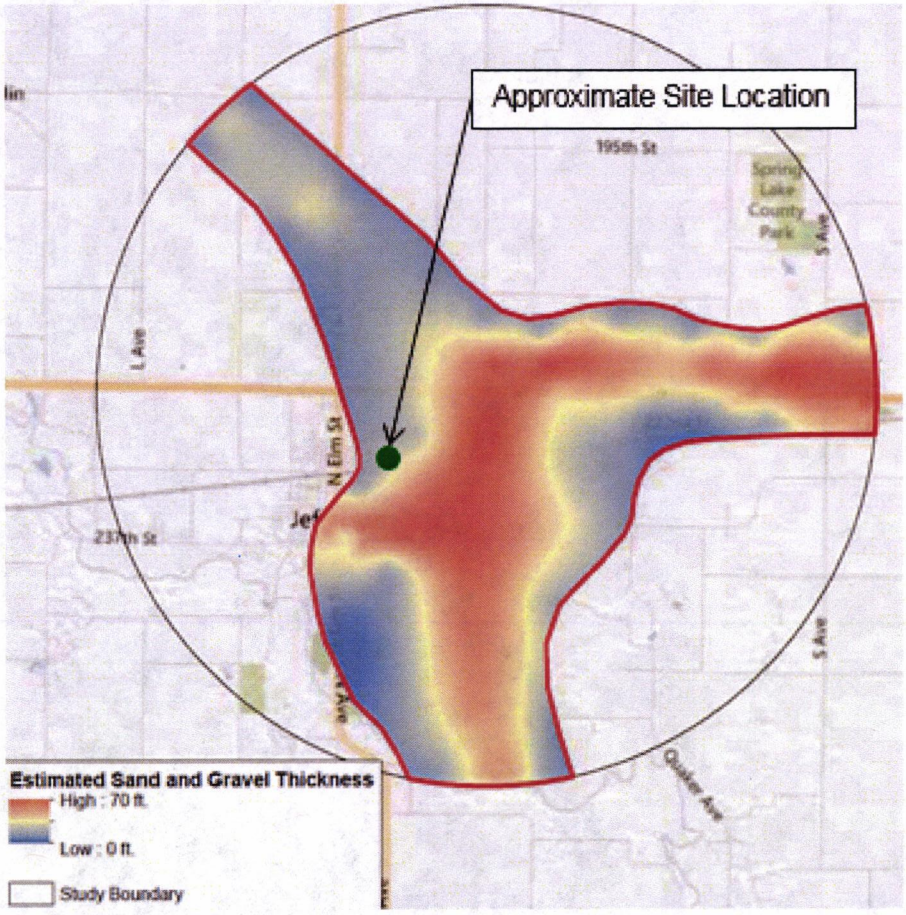
Depth of MW-67

- Various tills to approximately 90 ft. bgs
- Fine to coarse sand and gravel from approximately 90 ft. bgs to 100 ft. bgs
- Silty clay (till) from approximately 100 to 105 ft. bgs.



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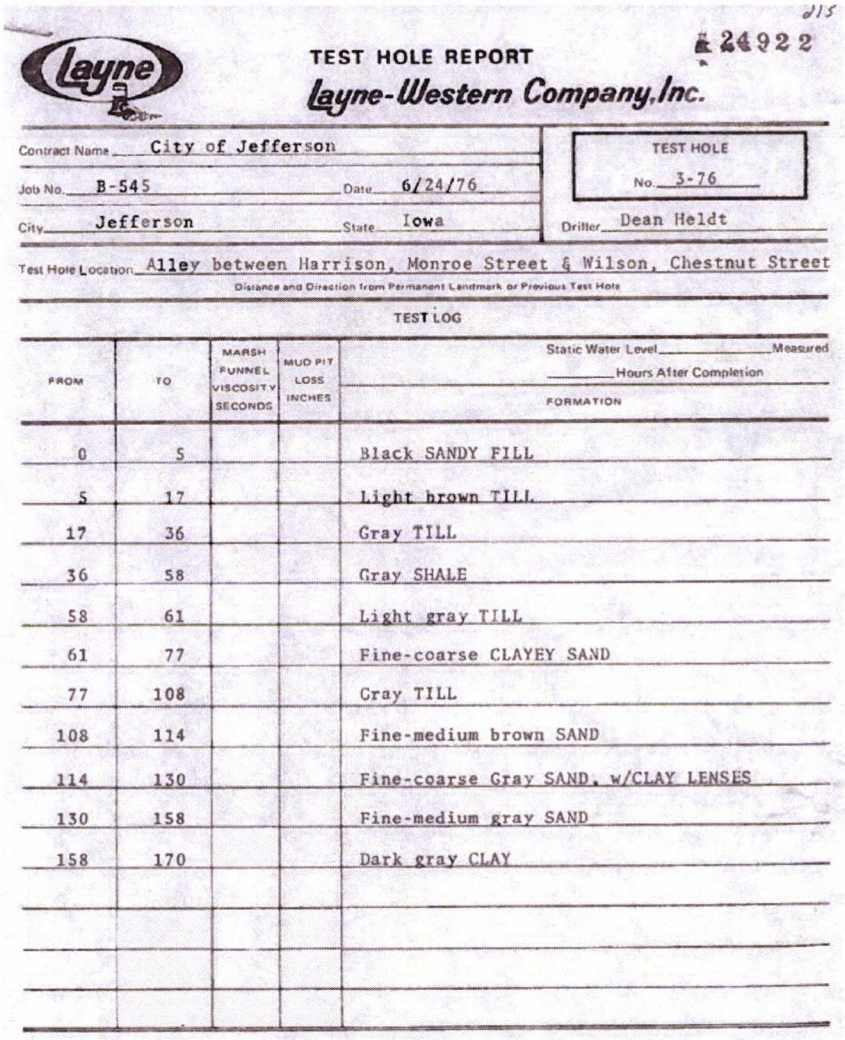
Typical City Well Log (south pumping area)

- Sand and gravel about 10 ft. deeper than intercepted on site
- Sand all gravel is thicker than observed on site
- All City borings/logs show transition back into silt/clay (till)
- None intercepted shale



Layne

TEST HOLE REPORT

Layne-Western Company, Inc.

215

24922

Contract Name: City of Jefferson

Job No.: B-545 Date: 6/24/76

City: Jefferson State: Iowa

TEST HOLE No.: 3-76

Driller: Dean Heldt

Test Hole Location: Alley between Harrison, Monroe Street & Wilson, Chestnut Street

Distance and Direction from Permanent Landmark or Previous Test Hole

TEST LOG

Static Water Level _____ Measured _____ Hours After Completion

FROM	TO	MARSH FUNNEL VISCOSITY SECONDS	MUD PIT LOSS INCHES	FORMATION
0	5			Black SANDY FILL
5	17			Light brown TILL
17	36			Gray TILL
36	58			Gray SHALE
58	61			Light gray TILL
61	77			Fine-coarse CLAYEY SAND
77	108			Gray TILL
108	114			Fine-medium brown SAND
114	130			Fine-coarse Gray SAND, w/CLAY LENSES
130	158			Fine-medium gray SAND
158	170			Dark gray CLAY

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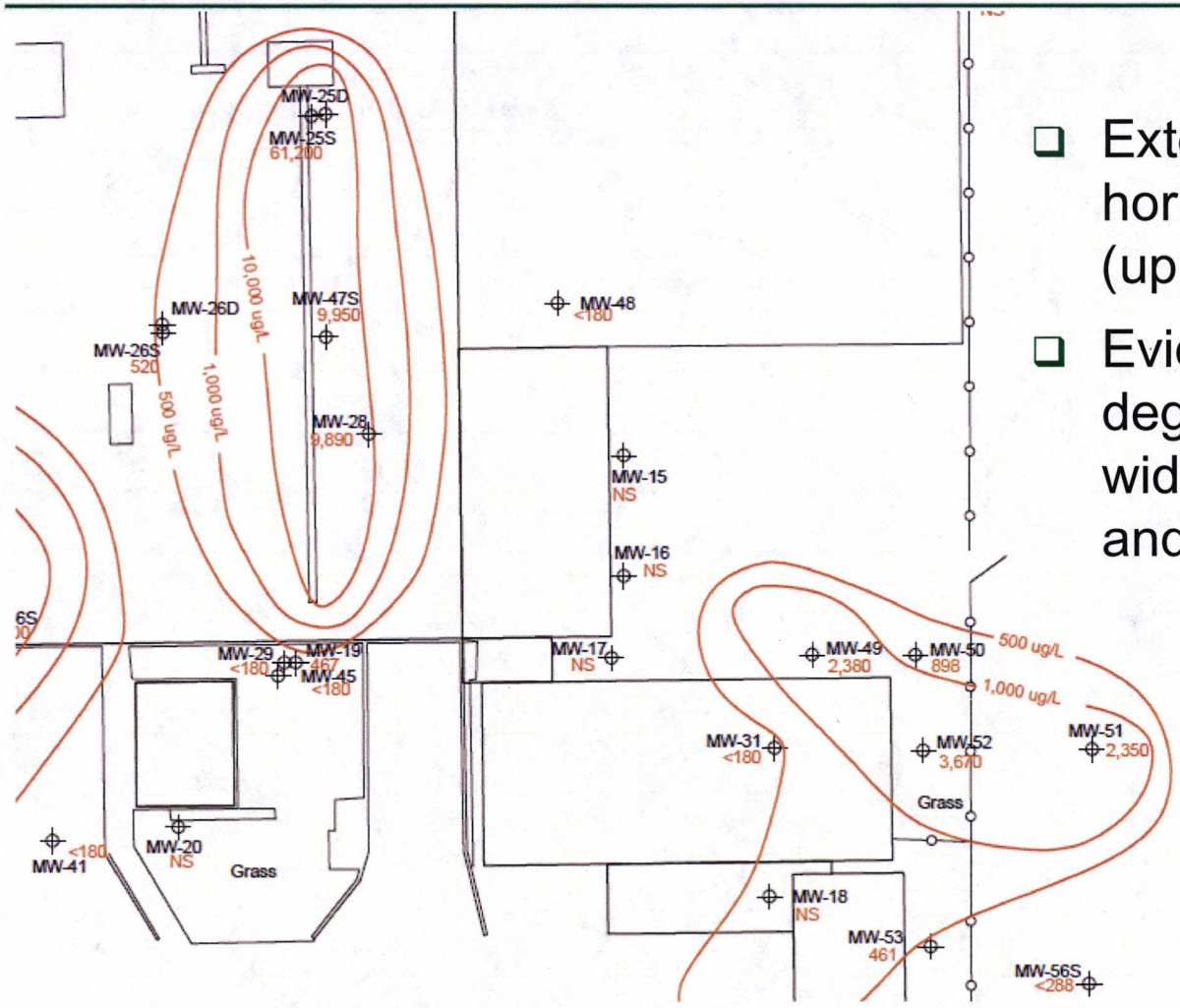
TPH as Carbon Source – Degradation of CVOCs



- Extent of TPH is limited horizontally and vertically (upper tills only)
- Evidence of CVOC degradation much more widespread both horizontally and vertically

Supplemental Soil and Groundwater Assessment Addendum Report Golder, May 2013

Figure 26
Interpreted TPH Isoconcentration Contours for Wells Screened in the Upper Till Units

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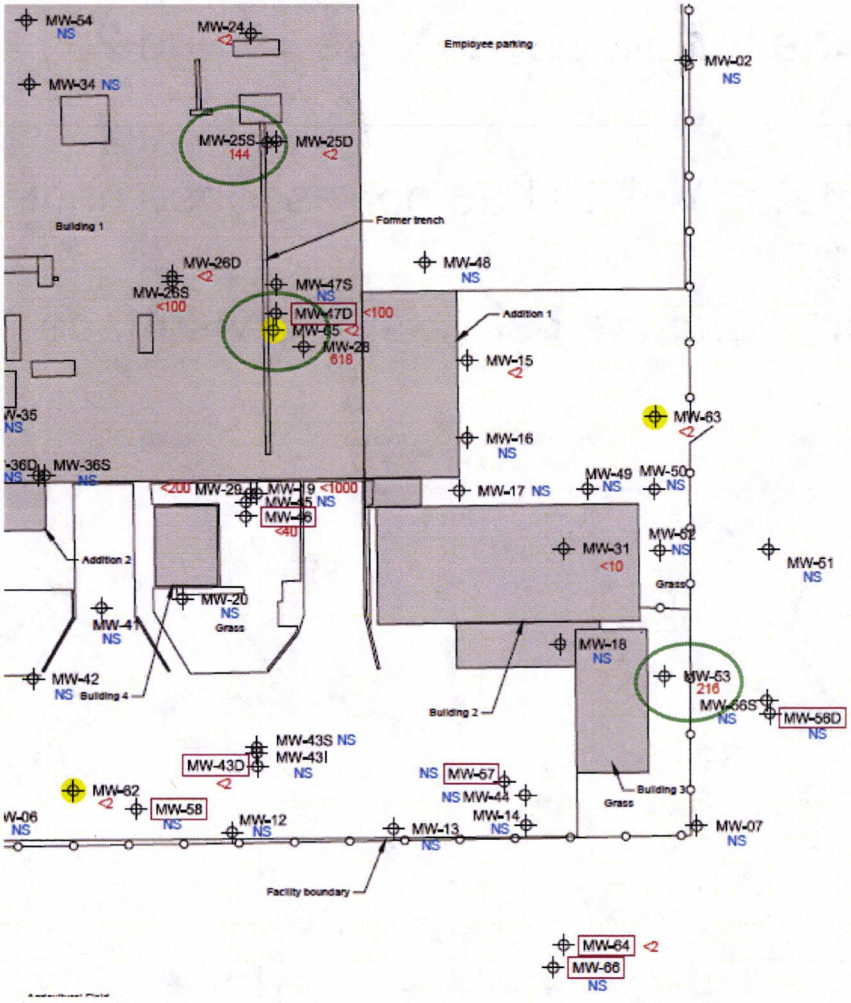
1,4-Dioxane



- Samples from 18 wells for analyzed for 1,4-Dioxane in October 2013
- Nine samples were non-detect (<2.0 ug/l), including:
  - both wells screened in the yellow-brown till (MW-43D and MW-64)
  - all three wells screened in the dark gray till (MW-62, MW-63, and MW-65)
- Six samples non-detect (<10 ug/L to <1,000 ug/L)
- Three detections, all in the Upper Tills, two in source areas

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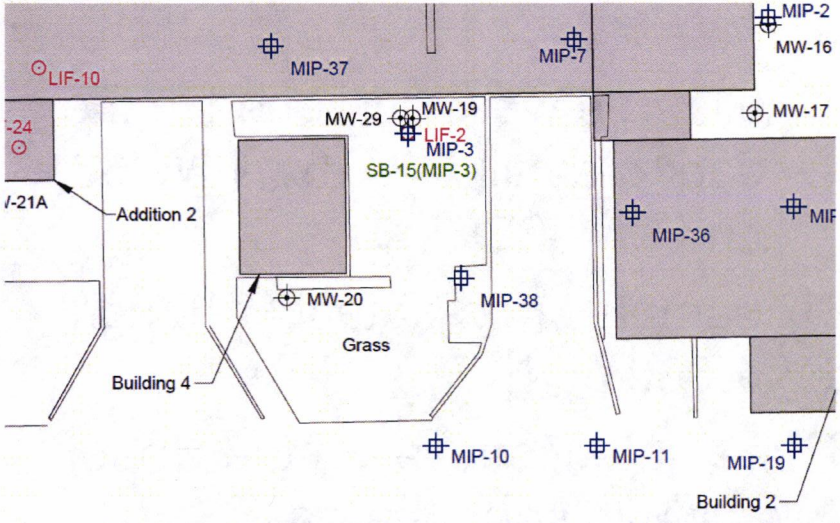
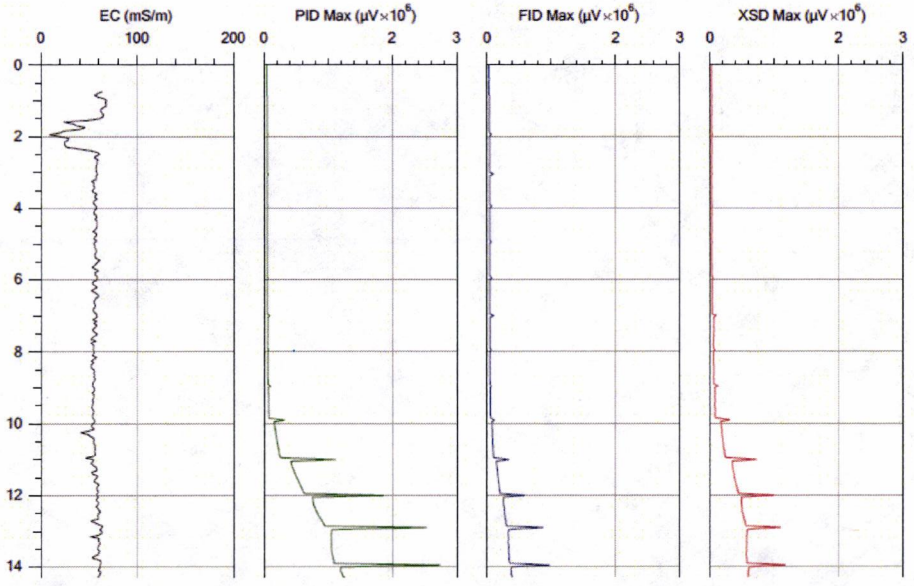
Shallow soils south of building

- Small area of exposed soils south of the building near MWs 19 and 29
  - No analytical data for shallow soils
  - Membrane interface probe (MIP) data (MIP-3) had no response until approximately ten ft. bgs
- No evidence of shallow soil impact, no exposure risk to shallow/surface soil





Summary

- Pleistocene Sand and Gravel Unit Groundwater
  - Capture zones/flow directions presented in the Iowa Geological Study should not be affected by water pumped from the Hamilton Cement Company well
  - Monitoring well MW-67 is appropriately located and screened to assess groundwater quality in the PS&G Unit
- TPH as carbon source to degrade CVOCs is not a driver in the deeper intervals (i.e., >15 ft bgs), beneficial but not necessary
- 1,4-Dioxane is limited to the upper till unit (~19 ft bgs) and is located on Site
- No evidence of shallow soil impact in small area of exposed soils south of the building, no exposure risk to shallow surface soils – Site is secure and there are no for future development

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Next Steps

- Confirmation groundwater sampling
  - Two new wells (MW-66 and MW-67)
  - MW-65 (Deep Till Well)
- Complete receptor analysis
  - Perform private well survey

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